

REMARKS/ARGUMENTS

Applicant thanks Examiner for the detailed Office Action dated November 23, 2005. In response to the issues raised, the Applicant offers the following submissions.

Specification

The Applicant has amended Page 1 of the specification, deleting its first line and replacing it with a Paragraph entitled "Cross-Reference to Related Application". The Applicant submits that this amendment introduces no new matter.

35 U.S.C. §102

Claims 1 to 6, 8 to 10, 15, 19 to 25, 27 to 29, 38 to 42, 44 to 46 and 51 stand rejected for lack of novelty in light of US 5,796,416 to Silverbrook. The Applicant disagrees.

The '416 disclosure teaches a drop-on-demand printhead that reduces power consumption by separating the drop selection actuator from the drop separation actuator. In the embodiment shown in the figures, the printhead maintains the ink at a pressure that is elevated relative to ambient, but not high enough to overcome the surface tension of the ink across the nozzle apertures. Each nozzle has a heater which heats the ink to reduce the surface tension so that the ink pressure ejects a drop. The ink pressure is the drop separation actuator and the heaters are the drop selection actuators (see col. 7, ll.11-16, and the description of Figs. 2a to 2f and 3a to 3e at cols. 11 and 12).

The heater at each nozzle does not heat the ink to a temperature above its boiling point to generate a gas bubble that ejects an ink drop. The '416 heaters just warm the ink to lower its viscosity and therefore the surface tension.

The '416 reference does discuss printheads that heat the ink to generate a bubble to cause droplet ejection. These are referred to as thermal inkjet (or TIJ) printheads and they are mentioned in the discussion of the prior art in the Background section, and again at col. 7, ll. 3-10. However, TIJ is dismissed as being unable to provide a low cost, high speed high resolution printhead because of the heat generated. Accordingly, it is not listed as an option for use as a drop selection means (tabulated in col. 7) or a drop separation means (tabulated in col.8).

In light of the above, the cited reference does not disclose a TIJ printhead wherein "the heat energy difference between an ejected drop of the ejectable liquid and an equivalent volume of the ejectable liquid supplied to the nozzle to replace the ejected drop, is substantially equal to the electrical energy required by the heater and the drive circuitry to eject the drop" as required by independent claims 1, 19 and 38. Accordingly, the '416 disclosure fails to anticipate claims 1 to 6, 8 to 10, 15, 19 to 25, 27 to 29, 38 to 42, 44 to 46 and 51.

35 U.S.C. §103

Claims 7 and 26 stand rejected as obvious in light of '416 in view of US 4,894,664 to Tsun Pan. It follows from the above submissions in relation to §102, that the combined disclosures of the cited references fail to teach the combination of elements defined by claims 7 or 26. Accordingly, the cited references do not support a rejection under §103.

Claims 11, 30 and 47 stand rejected as obvious in light of '416 in view of US 2002/0071001 to Sekiya. It follows from the above submissions in relation to §102, that the combined disclosures of the cited references fail to teach the combination of elements defined by claims 11, 30 or 47. Accordingly, the cited references do not support a rejection under §103.

Claims 12, 31 and 48 stand rejected as obvious in light of '416 in view of US 4,580,149 to Domoto. It follows from the above submissions in relation to §102, that the combined disclosures of the cited references fail to teach the combination of elements defined by claims 12, 31 or 48. Accordingly, the cited references do not support a rejection under §103.

Claims 13, 32 and 50 stand rejected as obvious in light of '416 in view of US 3,958,255 to Chiou et al. It follows from the above submissions in relation to §102, that the combined disclosures of the cited references fail to teach the combination of elements defined by claims 13, 32 or 50. Accordingly, the cited references do not support a rejection under §103.

Claims 14, 33 and 49 stand rejected as obvious in light of '416 in view of JP 0710158 to Mizutani. It follows from the above submissions in relation to §102, that the combined disclosures of the cited references fail to teach the combination of elements defined by claims 14, 33 or 49. Accordingly, the cited references do not support a rejection under §103.

Claims 16, 35 and 52 stand rejected as obvious in light of '416 in view of US 4,513,298 to Scheu. It follows from the above submissions in relation to §102, that the combined disclosures of the cited references fail to teach the combination of elements defined by claims 16, 35 or 52. Accordingly, the cited references do not support a rejection under §103.

Claims 17, 36 and 53 stand rejected as obvious in light of '416 in view of US 6,637,866 to Cornell et al. It follows from the above submissions in relation to §102, that the combined disclosures of the cited references fail to teach the combination of elements defined by claims 17, 36 or 53. Accordingly, the cited references do not support a rejection under §103.

Claims 18, 37 and 54 stand rejected as obvious in light of '416 in view of US 3,973,106 to Ura. It follows from the above submissions in relation to §102, that the combined disclosures of the cited references fail to teach the combination of elements defined by claims 18, 37 or 54. Accordingly, the cited references do not support a rejection under §103.

It is respectfully submitted that the Examiner's rejections have been successfully traversed and the application is now in condition for allowance. Accordingly, favorable reconsideration is courteously solicited.

Very respectfully,

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